REMARKS

Entry of the foregoing, reexamination and reconsideration of the above-identified application is respectfully requested.

Claims 13, 24 and 29 have been rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. This rejection is respectfully traversed.

The phrase "polysaccharide having about the same number of hydrogen bonding sites as dextran" is said to be unclear. It is believed that this phrase would be sufficiently clear to a person skilled in the art. A person skilled in the art would know what a polysaccharide is. A person skilled in the art would also know what dextran's structure is and would know the number of hydrogen bonding sites present in the molecule. Knowing the number of hydrogen bonding sites of dextran, one skilled in the art could readily look at the molecular structure of a different polysaccharide and determine whether it has the same number of hydrogen bonding sites.

This phrase is thus sufficiently clear. Withdrawal of this rejection under §112(2) is thus respectfully requested and believed to be in order.

Claims 15, 27 and 34 have been rejected under 35 U.S.C. §112, first paragraph, as allegedly containing subject matter not described or enabled by the specification. This rejection is respectfully traversed.

It is asserted that, while the specification is enabling for improving mucus clearance by administering dextran to the respiratory tract at a concentration of 4 to 40 mg/mL, it does not enable all polysaccharides or other concentrations. First, these claims do not

cover the use of "all polysaccharides". The claims are instead directed to the use of polysaccharides having the same number of hydrogen bonding sites as dextran. The specification clearly explains why the other polysaccharides as claimed would work similar to dextran in a method of treatment as claimed:

> [D]extran of the present invention is believed to reduce viscoelasticity by competing for hydrogen bonding sites with other mucus glycoproteins resulting in the substitution, by dextran carbohydrate moieties, of oligosaccharide moieties linked to the high molecular weight mucin peptides that make up the mucus gel. For the lower molecular weight dextran (most preferably in the range of 4000 or less), these new hydrogen bonds are structurally and rheologically ineffective, thus reducing the overall crosslink density. This reduction in the crosslinking of the three dimensional mucus glycoprotein network is believed to improve mucus clearance by ciliary and cough mechanisms. Page 7, lines 5-14.
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> The mechanism for the improvement in viscoelasticity with dextran administration is believed to be due to the substitution of dextran moieties in hydrogen bonding sites otherwise occupied by oligosaccharide moieties linked to neighboring high molecular weight peptides. The original intermolecular mucin-mucin bonds contribute to the three-dimensional structure that makes up the mucus gel, while the new mucin-dextran bonds form ineffective crosslinks because of the relatively small length of the dextran polymer. Other polysaccharides with a similar number of hydrogen bonding sites to dextran of the present invention or containing sugar moieties that stereochemically complement the oligosaccharide moieties native to the respiratory tract mucins, including oligomers of galactose and fucose and the amino sugars glucosamine and galactosamine are expected to compete for hydrogen bonding sites in the mucus gel, by forming complementary interaction with the oligosaccharide side chains of mucin macromolecules and thereby reduce the overall crosslink density of the mucus gel. These polysaccharides, at a suitable dosage may be administered in the known manner to patients suffering from conditions associated with defect in the airway mucus clearance, including CF, chronic bronchitis, bronchiectasis and bronchial asthma. Page 8, lines 5-20.

These paragraphs, at the very least, disclose applicants' invention as claimed.. Applicants were clearly in possession of the invention as claimed since it is specifically disclosed to use other polysaccharides having a similar structure in terms of the number of

hydrogen bonding sites. These additional polysaccharides are also enabled since the specification discloses that the dextran is believed to substitute in hydrogen bonding sites otherwise occupied by oligosaccharide moieties linked to neighboring high molecular weight peptides, and thus reduce the overall crosslink density of and break up the three-dimensional structure of mucus gel. Since dextran works in this manner, the similarity of structure of the polysaccharides is not critical. What is important is the number of hydrogen bonding sites.

With respect to concentration, one skilled in the art could readily test different concentrations of the polysaccharide to be administered. No undue experimentation would be necessary to optimize this parameter. One skilled in the art reading the claims in light of the specification would recognize that the dosage range from 4 to 40 mg/ml is preferred. However, the exact dosage may differ and can readily be found by a person skilled in the art.

Exemplification of each and every polysaccharide and dosage is not required to satisfy the requirements of §112. As found by the court in *In re Brana*, 34 USPQ2d 1436 (Fed. Cir. 1995), *in vivo* efficacy in humans did not have to be proven to satisfy the requirements of §112.

In view of the above, this rejection is believed to be in error. Withdrawal of this rejection under §112(1) is respectfully requested and believed to be in order.

Claims 13-37 have been rejected under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over claims 1-23 of U.S.

Patent No. 6,339,075. Upon indication that these claims are otherwise in condition for allowance, applicants will address this rejection and/or submit a terminal disclaimer. Once the scope of the instant claims is determined, this rejection can be addressed.

Further and favorable action in the form of Notice of Allowance is respectfully requested and believed to be in order.

In the event that there are any questions relating to this amendment or the application in general, it would be appreciated if the Examiner would contact the undersigned attorney be telephone so that prosecution would be expedited.

Respectfully submitted,

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